

CLAIMS

We claim:

1. A fire retardant composition comprising:
at least one fire retardant comprised of at least one ammonium
5 polyphosphate and at least one biopolymer having a weight average particle
diameter less than about 100 microns.
2. The composition of claim 1 further comprising at least one additive selected
from a group of additives consisting of suspending agents, coloring agents,
surfactants, stabilizers, corrosion inhibitors, opacifying pigments and any
10 combination thereof.
3. The composition of claim 2 wherein said coloring agent is at least one coloring
agent selected from a group of coloring agents consisting of fugitive coloring
agents, non-fugitive coloring agents and opacifying pigments.
4. The composition of claim 2 wherein said suspending agent is at least one
15 suspending agent selected from a group consisting of Attapulugus, Sepiolite,
Fuller's earth, Montmorillonite and Kaolin clays.
5. The composition of claim 1 further comprising additional water.
6. The composition of claim 5 wherein said composition comprises in the range
of about .00224% to about 1.12% said biopolymer.
- 20 7. The composition of claim 5 wherein said composition comprises about 0.112%
said biopolymer.
8. The composition of claim 5 wherein said composition comprises at least
0.112% said biopolymer.

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9. The composition of claim 5 wherein said composition comprises about 0.224% said biopolymer.
10. The composition of claim 5 wherein said composition comprises about 0.672% said biopolymer.
- 5 11. The composition of claim 1 comprising in the range of about .01% to about 5.0% said biopolymer.
12. The composition of claim 1 comprising about 1.0% said biopolymer.
13. The composition of claim 1 comprising about 3.0% said biopolymer.
14. The composition of claim 1 comprising at least 0.5% said biopolymer.
- 10 15. The composition of claim 1 comprising about 0.5% said biopolymer.
16. The composition of claim 1 wherein said biopolymer is at least one biopolymer selected from a group of biopolymers consisting of rhamosan, xanthan and welan biopolymers.
17. The composition of claim 1 wherein said biopolymer is at least one xanthan
- 15 biopolymer.
18. The composition of claim 1 comprising no hydroxypropyl guar gum.
19. A fire retardant composition comprising:
- at least one fire retardant comprised of at least one ammonium polyphosphate;
- 20 in the range of about .01% to about 5.0% at least one xanthan biopolymer having a weight average particle diameter less than about 100 microns; and
- at least one additive selected from a group of additives consisting of coloring agents, surfactants, stabilizers, corrosion inhibitors, opacifying pigments and any combination thereof.

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20. A fire retardant composition comprising:

at least one fire retardant comprised of at least one ammonium
polyphosphate;
water;

5 in the range of about .00224% to about 1.12% of at least one xanthan
biopolymer having a weight average particle diameter less than about 100 microns;
and

at least one additive selected from a group of additives consisting of
coloring agents, surfactants, stabilizers, corrosion inhibitors, opacifying pigments
10 and any combination thereof.

21. A method of preparing a fire retardant composition, adapted for aerial
application to wildland fires, the method comprising the steps of:

(a) forming an intermediate concentrate composition comprising:

(i) a fire retardant comprised of at least one ammonium
15 polyphosphate; and
(ii) at least one biopolymer having a weight average particle
diameter less than about 100 microns; and

(b) diluting said intermediate concentrate with water to form said fire
retardant composition.

20 22. The method of claim 21 wherein said step of forming an intermediate
concentrate composition comprises forming an intermediate concentrate
composition comprising:

(i) a fire retardant comprised of at least one ammonium polyphosphate;

(ii) at least one biopolymer having a weight average particle diameter less than about 100 microns; and

(iii) at least one additive selected from a group of additives consisting of coloring agents, suspending agents, surfactants, stabilizers, corrosion inhibitors and any combination thereof.

23. The method of claim 22 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate composition comprising:

(i) a fire retardant comprised of at least one ammonium polyphosphate;

(ii) at least one biopolymer having a weight average particle diameter less than about 100 microns; and

(iii) a coloring agent selected from a group consisting of fugitive coloring agents, non-fugitive coloring agents, opacifying pigments and any combination thereof.

24. The method of claim 22 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate composition comprising:

(i) a fire retardant comprised of at least one ammonium polyphosphate;

(ii) at least one biopolymer having a weight average particle diameter less than about 100 microns; and

(iii) at least one suspending agent selected from a group consisting of Attapulugus, Sepiolite, Fuller's earth, Montmorillonite and Kaolin clays.

25. The method of claim 21 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate composition comprising in the range of about .01% to about 5.0% said biopolymer.

26. The method of claim 21 wherein said step of forming an intermediate
5 concentrate composition comprises forming an intermediate concentrate composition comprising about 3.0% said biopolymer.

27. The method of claim 21 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate composition comprising about 1.0% said biopolymer.

10 28. The method of claim 21 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate composition comprising about 0.5% said biopolymer.

29. The method of claim 21 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate
15 composition comprising:

(i) a fire retardant comprised of at least one ammonium polyphosphate; and
(ii) at least one biopolymer having a weight average particle diameter less than about 100 microns, wherein said biopolymer is at least one selected from a group consisting of xanthan, welan and rhamsan biopolymers.

20 30. The method of claim 21 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate composition comprising:

(i) a fire retardant comprised of at least one ammonium polyphosphate; and

(ii) at least one xanthan biopolymer having a weight average particle diameter less than about 100 microns.

31. The method of claim 21 wherein said step of diluting said intermediate concentrate with water to form said fire retardant composition comprises diluting
5 said intermediate concentrate with water such that said fire retardant composition comprises in the range of about .00224% to about 1.12% said biopolymer after said dilution step.

32. The method of claim 21 wherein said step of diluting said intermediate concentrate with water to form said fire retardant composition comprises diluting
10 said intermediate concentrate with water such that said fire retardant composition comprises at least about 0.112% said biopolymer after said dilution step.

33. The method of claim 21 wherein said step of diluting said intermediate concentrate with water to form said fire retardant composition comprises diluting
15 said intermediate concentrate with water such that said fire retardant composition comprises about 0.112% said biopolymer after said dilution step.

34. The method of claim 21 wherein said step of diluting said intermediate concentrate with water to form said fire retardant composition comprises diluting
said intermediate concentrate with water such that said fire retardant composition comprises at least about 0.672% said biopolymer after said dilution step.

20 35. The method of claim 21 wherein said step of diluting said intermediate concentrate with water to form said fire retardant composition comprises diluting
said intermediate concentrate with water such that said fire retardant composition comprises at least about 0.224% said biopolymer after said dilution step.

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36. The method of claim 21 wherein said step of forming an intermediate concentrate composition comprises forming an intermediate concentrate composition comprising at least about 0.5% said biopolymer.

37. A method of preparing a fire retardant composition, adapted for aerial
5 application to wildland fires, the method comprising the steps of:

(a) forming an intermediate concentrate composition comprising:

(i) a fire retardant comprised of at least one ammonium
polyphosphate; and

(ii) a xanthan biopolymer having a weight average particle
10 diameter of less than about 100 microns;
wherein said intermediate concentrate composition comprises in the range of about
.01% to about 5.0% said xanthan biopolymer; and

(b) diluting said intermediate concentrate with water to form said fire
retardant composition.

15 38. A method of suppressing wildland fires comprising aeri ally applying to
wildland vegetation a fire suppressing composition comprising:

water; and

a fire retardant composition comprising:

at least one ammonium polyphosphate; and

20 at least one biopolymer having a weight average particle diameter of less
than about 100 microns.

39. The method of claim 38 wherein said fire retardant compositions further
comprises at least one additive selected from a group consisting of coloring agents,

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suspending agents, surfactants, stabilizers, corrosion inhibitors and any combination thereof.

40. The method of claim 39 wherein said fire retardant composition further comprises at least one coloring agent selected from a group consisting of fugitive
5 coloring agents, non-fugitive coloring agents, opacifying pigments and any combination thereof.

41. The method of claim 39 wherein said fire retardant composition further comprises at least one suspending agent selected from a group of suspending agents consisting of Attapulgius, Sepiolite, Fuller's earth, Montmorillonite and
10 Kaolin clays.

42. The method of claim 39 wherein said step of aially applying to wildland vegetation a fire suppressing composition comprises aially applying to wildland vegetation said fire suppressing composition, wherein said fire suppressing composition comprises in the range of about 0.00224% to about 1.12% said
15 biopolymer.

43. The method of claim 39 wherein said step of aially applying to wildland vegetation a fire suppressing composition comprises aially applying to wildland vegetation said fire suppressing composition, wherein said fire suppressing composition comprises about 0.672% said biopolymer.

20 44. The method of claim 39 wherein said step of aially applying to wildland vegetation a fire suppressing composition comprises aially applying to wildland vegetation said fire suppressing composition, wherein said fire suppressing composition comprises about 0.112% said biopolymer.

49. A method of suppressing wildland fires comprising a) applying to wildland vegetation a fire suppressing composition comprising:

in the range of about .00224% to about 1.12% at least one xanthan
biopolymer having a weight average particle diameter less than about 100 microns;
and

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at least one additive selected from a group of additives consisting of coloring agents, surfactants, stabilizers, suspending agents, corrosion inhibitors and any combination thereof.

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